

**DESIGNING A CONCEPTUAL MODEL FOR INTERNET DATA
CENTER**

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**UNIVERSITI UTARA MALAYSIA
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DESIGNING A CONCEPTUAL MODEL FOR INTERNET DATA CENTER

**A thesis submitted to the Information Technology School in partial
fulfilment of the requirements for the degree
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**By
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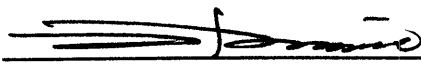
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ABSTRAK

Thesis ini bertujuan membangunkan model konseptual bagi *Internet Data Center(IDC)*. IDC menyediakan kemudahan terhadap kebanyakan organisasi supaya dapat megukuhkan kemudahan tunggal dan berkonsi kepada *host* pelayan Internet and perkhidmatan pada kadar yang berpatutan. Unsur pembinaan rangkaian IDC adalah berdasarkan beberapa kunci utama seperti pelanggan, *perimeter routers*, *load balancers*, *cloned front-end Web servers*, *multilayer switches*, *firewalls*, *infrastructure servers and back-end database* dan pengurusan sistem. Thesis ini juga berfokuskan komponen logikal yang menyediakan kemudahan yang mudah di ukur, memperolehi, selamat dan dapat diuruskan. Kelebihan utama IDC adalah, ia mengurangkan modal dan perbelanjaan pengendalian dalam organisasi. Pemiagaan besar merupakan model kepada perubahan dinamik yang kebiasaannya akan dimulakan dengan permintaan yang kecil and terus membangun. Pembangunan ini dilaksanakan dalam sokongan unik pengguna yang boleh membangun dengan pantas dan juga dalam kerumitan dan integrasi perkhidmatan pelanggan yang diberi. Pembangunan ini mesti dibina dalam rekabentuk asas yang kukuh yang dapat menyokong perolahan yang tinggi, *infrastructure* yang selamat dan dalam pengurusan *infrastructure*.

ABSTRACT

The purpose of this article is to describe the development of a conceptual model for Internet data center (**IDC**). IDC is a facility where many organizations can leverage a single, shared infrastructure to economically host Internet servers and services. The key architectural elements of the IDC network include clients, perimeter routers, load **balancers**, cloned front-end Web servers, multilayer switches, firewalls, infrastructure servers and back-end database and management systems. This paper focuses on the logical components that provide an infrastructure that is scalable, available, secure, and manageable. The major benefits of IDC are, it will reduce capital and operating expenses in an organization. Large businesses are models of dynamic change. They usually start small and grow exponentially with demand. They grow both in the number of unique users supported, which can grow extremely quickly, and in the complexity and integration of user services offered. This growth must be built on a solid architectural foundation that supports high availability, a secure infrastructure, and a management infrastructure.

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CHAPTER 1

INTRODUCTION

A data centre is a large data housing infrastructure that provides secure, high bandwidth access to clients for a range of Internet related services. Essentially it comprises servers, firewalls, high bandwidth Internet links and stringent physical security facilities (Dodds, 2000). A data center physically houses various equipment, such as computers, servers (e.g., web servers, application servers, database servers), switches routers, data storage devices, load balancers, wire cages or closets, vaults, racks, and related equipment. Some data centers may have critical requirements for security and reliability anytime.

An Internet data center (IDC) is a subset of data center, which is for all intents and purposes, a warehouse filled with computer servers in a carefully controlled environment. IDCs usually have multiple high-speed Internet connections, just in case one connection goes down, on-site technical support staff, very tight security, and gas-based fire suppression systems (McReynolds, 2001). Dodds (2000) adds that, many large Web hosts have their own data centers, and most of the smaller hosts rent space in them. The data center is (in theory) a safe and secure place for the computer equipment to operate, equipped with security guards, camera, cooling units, generators, guaranteed fuel availability, and support offices.

Large businesses are models of dynamic change. They usually start small and grow exponentially with demand. They grow both in the number of unique users supported, which can grow extremely quick, and in the complexity and integration of user services offered. The business plans for many startups are vetted by their investors for a believable 10-100x scalability projection. Successful

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